

CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

R/V *Savannah* Cruise SH-12-33
24 August – 1 September 2012
Total Number of Sea Days - 9

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
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Beaufort, NC 28516

94 camera-trap deployments
20 CTD casts

INTRODUCTION

The R/V *Savannah* departed Savannah, GA, on 24 August 2012 for the Southeast Fishery-Independent Survey (SEFIS) sampling in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and is run out of the Beaufort Laboratory. This survey conducts applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from randomly selected stations on known hardbottom habitats between 29.66 and 31.73° N. Additionally, non-random stations on known hardbottom habitat, and recon stations on suspected hardbottom habitat, were sampled. A total of 94 stations were sampled with camera-trap gear over 9 sea days between 18 and 84 meter depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, with 2 or 3 mounted high-definition video cameras, were utilized for (a) hardbottom reef fish community assessments, (b) collection of reef fish for biological samples (e.g., otoliths and gonads), and (c) comparative gear sampling (cameras versus traps).
2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.
3. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen, and turbidity) at camera-trap sampling locations.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted of two or three high definition video cameras mounted to a chevron fish trap. Chevron traps were constructed out of plastic-coated wire mesh. A Canon[®] camera (model HF S200) was attached above the mouth of the trap, and a GoPro[®] camera (model HD Hero with a flat-lens housing) was attached above the nose of the trap (Figure 1). Additionally, some traps had a third camera (GoPro) attached to the side of the trap, looking inward towards the mouth opening, so that reef fish entries and exits could be recorded. Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at randomly selected stations at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were counted, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., species in the

snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples were sent to the Marine Resources Monitoring, Assessment, and Prediction (MARMAP) Program laboratory for processing, and video files were brought to the NMFS Beaufort laboratory for further processing and analysis.

Environmental Data Collection

Environmental data were collected with a Seabird “Conductivity, Temperature and Depth” instrument package (CTD; model SBE 25) and Scientific Computer System software (SCS; version 4). CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were collected, including temperature (°C), salinity (psu), dissolved oxygen (mg/L), and turbidity (% transmission). CTD data were archived for further processing at the Beaufort laboratory. SCS software was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

SURVEY RESULTS

Camera-Trap Sampling

94 stations were sampled with camera-trap gear (Table 1, Figure 2).

Environmental Data Collection

20 CTD casts were conducted during the cruise (Table 1, Figure 2). CTD data will be processed back at the lab using Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS–Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth (m), date and time for each fishing event (camera-trap, Gear=324) and CTD cast (Gear=298) conducted on the SH-12-33 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection	Gear ID	Date	Start Time	Start Latitude	Start Longitude	Start Depth
123502	324	8/24/2012	21:39	31.68	-80.35	29
123503	324	8/24/2012	21:45	31.68	-80.34	29
123504	324	8/24/2012	21:49	31.68	-80.34	29
123505	298	8/24/2012	22:01	31.68	-80.33	29
123506	324	8/25/2012	12:03	31.57	-80.36	31
123507	324	8/25/2012	12:11	31.57	-80.36	30
123508	324	8/25/2012	12:17	31.58	-80.36	34
123509	324	8/25/2012	12:26	31.58	-80.36	30
123510	324	8/25/2012	12:32	31.58	-80.37	31
123511	324	8/25/2012	12:39	31.58	-80.38	30
123512	298	8/25/2012	12:52	31.56	-80.36	30
123513	324	8/25/2012	15:43	31.68	-80.33	30
123514	324	8/25/2012	15:46	31.68	-80.33	29
123515	324	8/25/2012	15:50	31.69	-80.32	30
123516	324	8/25/2012	15:54	31.69	-80.33	30
123517	324	8/25/2012	15:57	31.69	-80.33	29
123518	324	8/25/2012	16:00	31.68	-80.33	29
123519	298	8/25/2012	16:06	31.68	-80.33	30
123520	324	8/25/2012	19:26	31.74	-80.23	32
123521	324	8/25/2012	19:30	31.74	-80.22	33
123522	324	8/25/2012	19:35	31.74	-80.22	33
123523	324	8/25/2012	19:40	31.74	-80.21	34
123524	298	8/25/2012	19:51	31.73	-80.23	33
123525	324	8/26/2012	11:50	31.59	-80.38	29
123526	324	8/26/2012	11:57	31.58	-80.39	31
123527	324	8/26/2012	12:03	31.58	-80.39	29
123528	324	8/26/2012	12:07	31.58	-80.40	29
123529	324	8/26/2012	12:11	31.59	-80.40	31
123530	298	8/26/2012	12:25	31.59	-80.39	31
123531	324	8/26/2012	15:19	31.42	-80.37	36
123532	324	8/26/2012	15:23	31.42	-80.37	36
123533	298	8/26/2012	15:28	31.42	-80.37	36
123534	324	8/26/2012	18:09	31.27	-80.42	37
123535	324	8/26/2012	18:15	31.26	-80.42	37
123536	324	8/26/2012	18:20	31.26	-80.42	38

123537	324	8/26/2012	18:24	31.26	-80.42	37
123538	298	8/26/2012	18:32	31.27	-80.42	38
123539	324	8/26/2012	20:40	31.27	-80.51	33
123540	324	8/26/2012	20:51	31.26	-80.52	34
123541	298	8/26/2012	21:13	31.27	-80.52	34
123542	324	8/27/2012	17:46	31.60	-80.78	19
123543	324	8/27/2012	17:54	31.59	-80.77	20
123544	324	8/27/2012	17:59	31.59	-80.76	18
123545	324	8/27/2012	18:03	31.58	-80.76	21
123546	324	8/27/2012	18:07	31.57	-80.76	20
123547	298	8/27/2012	18:22	31.59	-80.78	20
123548	324	8/28/2012	11:56	30.21	-81.00	28
123549	324	8/28/2012	12:10	30.20	-80.99	27
123550	324	8/28/2012	12:27	30.21	-80.98	26
123551	324	8/28/2012	12:53	30.22	-81.02	27
123552	298	8/28/2012	13:01	30.22	-81.01	27
123553	324	8/28/2012	15:11	30.21	-80.91	28
123554	324	8/28/2012	15:14	30.21	-80.91	27
123555	324	8/28/2012	15:18	30.20	-80.90	27
123556	324	8/28/2012	15:23	30.20	-80.90	27
123557	324	8/28/2012	15:29	30.20	-80.90	27
123558	324	8/28/2012	15:32	30.20	-80.90	26
123559	298	8/28/2012	15:40	30.21	-80.91	28
123560	324	8/28/2012	20:41	29.84	-80.90	25
123561	324	8/28/2012	20:47	29.84	-80.90	26
123562	324	8/28/2012	20:59	29.84	-80.88	26
123563	298	8/28/2012	21:04	29.84	-80.88	27
123564	324	8/29/2012	12:07	29.66	-80.25	84
123565	324	8/29/2012	12:12	29.66	-80.26	71
123566	324	8/29/2012	12:16	29.66	-80.26	69
123567	324	8/29/2012	12:23	29.67	-80.28	63
123568	298	8/29/2012	12:40	29.66	-80.25	86
123569	324	8/29/2012	16:22	29.99	-80.28	56
123570	324	8/29/2012	16:30	29.99	-80.28	55
123571	324	8/29/2012	16:37	29.99	-80.28	55
123572	324	8/29/2012	16:43	29.99	-80.28	55
123573	298	8/29/2012	16:51	29.99	-80.28	55
123574	324	8/30/2012	12:04	30.41	-80.47	39
123575	324	8/30/2012	12:12	30.42	-80.48	39
123576	324	8/30/2012	12:16	30.43	-80.48	38
123577	324	8/30/2012	12:22	30.43	-80.49	37

123578	324	8/30/2012	12:37	30.44	-80.47	39
123579	324	8/30/2012	12:49	30.42	-80.47	38
123580	298	8/30/2012	12:57	30.41	-80.47	38
123581	324	8/30/2012	15:02	30.49	-80.51	37
123582	324	8/30/2012	15:07	30.49	-80.52	36
123583	324	8/30/2012	15:11	30.49	-80.52	40
123584	324	8/30/2012	15:14	30.49	-80.52	36
123585	324	8/30/2012	15:18	30.49	-80.53	37
123586	324	8/30/2012	15:24	30.49	-80.53	37
123587	298	8/30/2012	15:33	30.49	-80.51	36
123588	324	8/30/2012	17:30	30.50	-80.58	37
123589	324	8/30/2012	17:40	30.51	-80.58	35
123590	324	8/30/2012	17:52	30.50	-80.58	37
123591	324	8/30/2012	18:00	30.50	-80.59	35
123592	324	8/30/2012	18:02	30.50	-80.59	38
123593	324	8/30/2012	18:09	30.50	-80.59	38
123594	298	8/30/2012	18:18	30.50	-80.58	38
123595	324	8/30/2012	20:16	30.50	-80.65	37
123596	324	8/30/2012	20:28	30.51	-80.64	34
123597	324	8/30/2012	20:44	30.50	-80.61	36
123598	324	8/30/2012	20:56	30.51	-80.61	37
123599	324	8/30/2012	21:01	30.50	-80.60	35
123600	324	8/30/2012	21:15	30.50	-80.60	35
123601	298	8/30/2012	21:20	30.50	-80.60	35
123602	324	8/31/2012	12:19	30.56	-80.72	36
123603	324	8/31/2012	12:24	30.56	-80.72	35
123604	324	8/31/2012	12:38	30.56	-80.72	35
123605	324	8/31/2012	12:52	30.56	-80.74	35
123606	324	8/31/2012	12:55	30.56	-80.74	34
123607	324	8/31/2012	12:57	30.56	-80.74	34
123608	298	8/31/2012	13:08	30.56	-80.72	35
123609	324	8/31/2012	15:49	30.58	-80.78	33
123610	324	8/31/2012	15:55	30.58	-80.78	33
123611	324	8/31/2012	15:58	30.58	-80.78	33
123612	324	8/31/2012	16:03	30.58	-80.78	33
123613	324	8/31/2012	16:09	30.58	-80.79	32
123614	324	8/31/2012	16:13	30.58	-80.79	33
123615	298	8/31/2012	16:22	30.58	-80.78	32



Figure 1. Chevron trap with video cameras attached over the nose and mouth.

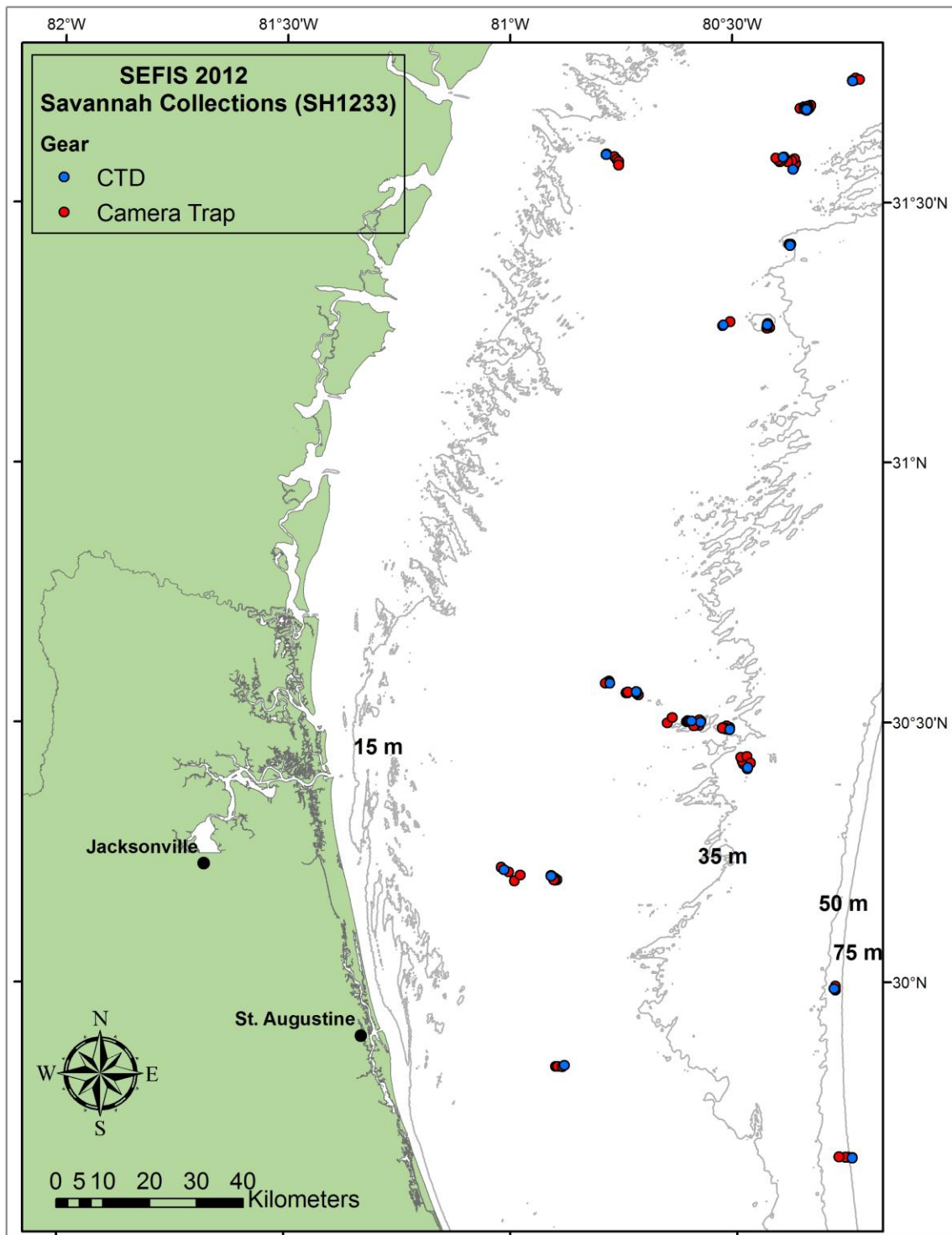


Figure 2. Locations of stations sampled with camera-trap and CTD gear on the SH-12-33 survey. Note that symbols overlap in many cases.

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